

REMARKS

Amendments to claims 1, 18, and 36-38 are to correct typographical errors. Amendments to claims 31 and 42 are to incorporate limitations from canceled dependent claims. Amendment to claim 45 is for the purpose of clarifying what Applicants regard as the invention. No new matter has been added.

I. OBJECTED CLAIMS

Claims 1, 18, and 36-38 stand objected to. These claims have been amended to remove the alleged deficiencies pointed out in the Office Action.

II. CLAIM REJECTIONS UNDER U.S.C. § 102

Claims 1, 3, 6-12, 14-17, and 31-53 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0048868 (Bailey). Applicants respectfully note that in order to sustain a rejection under § 102, each element in the rejected claim must be found, either expressly or inherently, in the cited reference.

Claims 1 and 14

Claim 1 recites *determining a radiation treatment plan* using configuration and radiation absorption data, wherein the configuration data and radiation absorption data are determined using first and second images formed by respective first and second beams having respective first and second energy levels (Emphasis added). Claim 14 recites similar limitations. Applicants respectfully submit that Bailey does not disclose or suggest determining a radiation treatment plan in the manner recited in claims 1 and 14. According to the Office Action, paragraphs 50-54 discloses determining a radiation treatment plan using configuration data and radiation absorption data. However, paragraphs 50-52 actually disclose:

[0050] During the *radiotherapy phase of treatment* it should be appreciated that the imaging system need not utilize full CT images to locate the target regions and move the patient table to insure the targeted region is in the region of interest so as to be exposed to substantially all of

the exposed radiation passing through the body. Instead the gantry 18 may be maintained in a fixed or stationary view prior to the exposure by the radiotherapy beam. Both X-ray sources 22A and 22B can be used to expose the region of interest for creating views. The two images can be taken sequentially, when the sources share the same detector array, or simultaneously, where each source emits X-rays to its own row of detectors as shown, for example, in FIG. 3. The two images can then be combined to provide a stereoscopic image, wherein the location of the target region can be determined.

[0051] Once the target region is determined from a particular location, the appropriate adjustments to the size and shape of the radiotherapy beam can be made and the region exposed.

[0052] Where the target region is not precisely aligned with the radiotherapy beam, the table can be adjusted to move the patient to insure the proper positioning (in the x, y and/or z directions). Alternatively, once the target region is determined to be in the proper position in the z direction, the angular position of the radiation source 40 of the radiotherapy machine 14 can be rotated to the proper orientation to insure that the radiotherapy beam is directed and shaped to match the targeted region.

(Emphasis Added)

As such, the cited passages disclose a treatment phase in which images are obtained to verify location of target region, and do not disclose or suggest determining a treatment plan, even less, determining a radiation treatment plan using configuration and radiation absorption data, wherein the configuration data and radiation absorption data are determined using first and second images formed by respective first and second beams having respective first and second energy levels. Notably, paragraphs 43-47 (not paragraphs 50-54) disclose a method of determining a treatment plan. However, these paragraphs do not disclose or suggest determining a treatment in the manner recited in claims 1 and 14. Also, paragraphs 53 and 54 actually disclose:

[0053] All of this exposure process can be done automatically, with some or complete control by the therapist, by using a computerized system including a computer 80, controllers 82 for controlling the power supplied by the supply 84 to the sources 22A, 22B and 40, as well as processing the data acquired during the planning and treatment phases. Further the

computerized system can automate the comparison of images taken during both phases to insure and maximize treatment.

[0054] Finally, the detector array 42 can measure and help control the dose of each exposure, an improvement over the current use of film. The output of the data acquisition system 44 can be used by the therapist to insure proper doses and exposure of radiation are being administered.

As such, the cited passages disclose using a computerized system during a planning phase and a treatment phase, and do not disclose or suggest determining a radiation treatment plan using configuration and radiation absorption data, wherein the configuration data and radiation absorption data are determined using first and second images formed by respective first and second beams having respective first and second energy levels. For at least the foregoing reasons, claims 1 and 14, and their respective dependent claims, are believed allowable over Bailey.

Claims 31 and 42

Claim 31 recites at least a portion of the determining the treatment plan and at least a portion of the illuminating an object with a treatment beam are performed *during a same patient session* (Emphasis added). Claim 42 recites similar limitations. Bailey does not disclose or suggest such limitations. Rather, Bailey discloses developing a treatment plan in a “planning stage” (or “planning phase”), and carrying out a treatment plan in a “treatment phase,” but does not disclose or suggest that at least a portion of the planning and at least a portion of the treatment phase are performed during a same patient session (see paragraphs 43 and 53). According to the Office Action, paragraphs 21, 23, 33, and 53-54 disclose the above limitation. However, Applicants respectfully submit that paragraphs 21 and 23 disclose a CT imaging subsystem and a radiation therapy subsystem, respectively, paragraph 33 discloses a system that can be used in a planning phase and a treatment phase, and paragraphs 53 discloses using a computerized system during the planning and treatment phases. As such, none of these paragraphs discloses or suggests the above limitations. For at least the foregoing reasons, claims 31 and 42, and their respective dependent claims, are believed allowable over Bailey.

Claim 45

Claim 45 recites a first beam source configured to generate a first radiation beam at a first intensity level and a second radiation beam at a second intensity level toward the platform, and a beam adjuster in front of the first beam source for adjusting a radiation beam directed from the first beam source. Bailey does not disclose or suggest a beam adjuster that is placed in front of a multi-energy beam source. Rather, Bailey discloses a system 10 having a high energy x-ray source 40, a collimator subsystem 46 in front of the x-ray source 40, and two imaging x-ray sources 22A, 22B (paragraphs 38-44 and figure 1). Although Bailey discloses that each of x-ray sources 22A, 22B can provide dual energy beam (paragraph 44), Applicants respectfully note that the collimator subsystem 46 (which is associated with x-ray source 40, and not x-ray sources 22A, 22B) is not placed in front of either of the x-ray sources 22A, 22B. For at least the foregoing reasons, claims 45 and 50, and their respective dependent claims, are believed allowable over Bailey.

III. CLAIM REJECTIONS UNDER U.S.C. § 103

Claims 2, 18, 20-24, and 26-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey in view of U.S. Patent No. 6,618,467 (Ruchala).

Claim 18 recites determining configuration data and radiation absorption data using an image formed by a MeV energy level beam. Claim 26 recites similar limitations. Applicants respectfully submit that neither Bailey nor Ruchala discloses such limitations. Rather, Bailey discloses using an imaging subsystem 12 to generate an image for obtaining configuration data (paragraphs 48 and 49), but does not disclose or suggest using the *same generated image* (i.e., from which configuration data is obtained) to obtain radiation absorption data. Instead, radiation absorption data is obtained from another image generated using detector array 42 (paragraph 54). Ruchala fails to make up the deficiencies present in Bailey. According to the Office Action, column 1, line 56 to column 2, line 14 of Ruchala discloses imaging beams that are in the kilovoltage range and megavoltage range. However, even if such feature of Ruchala were to be combined with the system of Bailey, the purported combination would not form the claimed subject matter, namely, determining configuration data and radiation absorption data using *an* image, even less, an image formed by a MeV energy level beam, as recited in claims 18 and 26. For at least the foregoing reasons, claims 18

and 26, and their respective dependent claims, are believed allowable over Bailey, Ruchala, and their combination.


CONCLUSION

Based on the foregoing, all remaining claims are believed in condition for allowance. If the Examiner has any questions or comments regarding this amendment, please contact the undersigned at the number listed below.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Bingham McCutchen's Deposit Account No. 50-2518, referencing billing number 7010742001. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Bingham McCutchen's Deposit Account No. 50-2518, referencing billing number 7010742001.

Respectfully submitted,
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